

Project Kickoff



EGR 445/545

Projects = Active Learning

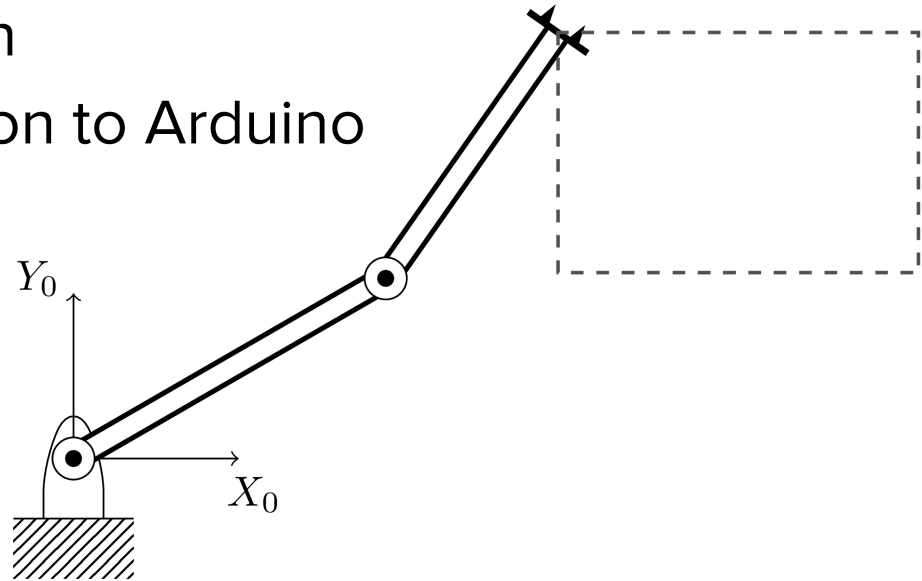
- Projects help you learn to make practical application of the material we are discussing in class.
 - this pushes you deeper in Bloom's taxonomy
 - this help you learn more
 - that makes me happy....

3 Main Projects and 2 Stepping Stones

- Project 1: Draw a rectangle with a two link robot
 - Built from a kit
 - Servo + Arduino
 - Two stepping stones:
 - i. Two byte serial
 - ii. Single servo control
- Project 2: Pick up and move 3D servo
- Project 3: Industrial robot project: TBD

Project 1: Draw a Rectangle

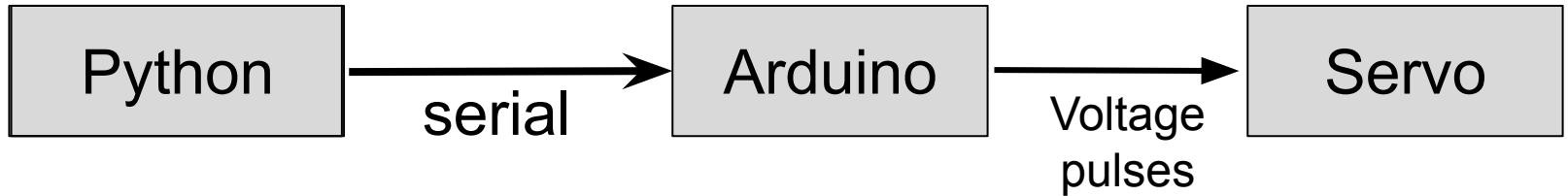
- Given 2 servos and some links and other hardware, program your robot to draw a rectangle
- Inverse kinematics in Python
- Serial commands from Python to Arduino
- Arduino commands servos



Stepping Stones to Project 1

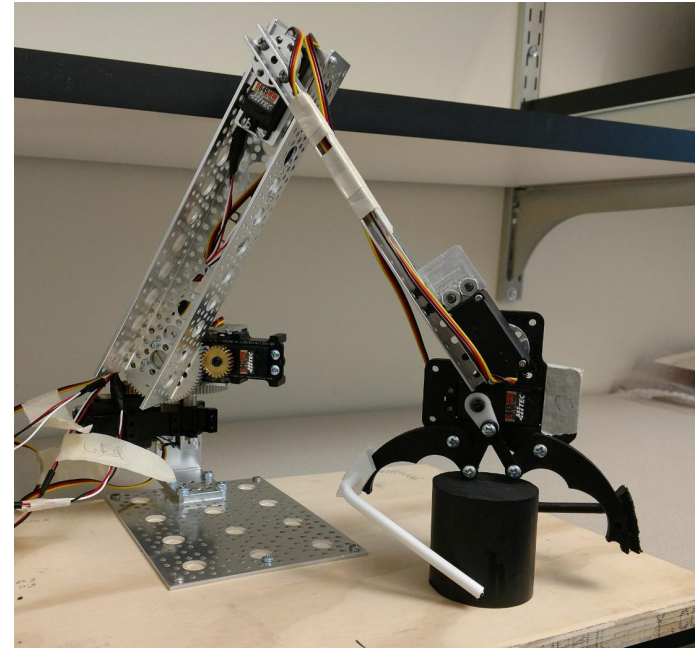
I will help you:

- Get up to speed with Python
- Get started with serial between Python and Arduino
- Control one servo using Python + Arduino



Project 2: 3D Manipulation

- Given:
 - 3 servos and other hardware
 - pick up and drop off coordinates (x,y,z)
- Task:
 - Program the robot to automatically go to the pickup location and then move the payload to the drop off location based on inverse kinematics



Project 3: Industrial Robot

- Use an industrial robot to perform tasks similar to project 1 and 2

